Documentations

Introduction

The purpose: The protocol is designed in order to connect TTool and Web crawler. In particular, TTool users will retrieve the information from database which needs help from Web crawler, so they need to unify a protocol to exchange information.

The protocol is divided into two directions, client side (TTool users) and server side (Web crawler). A new class named “Message” which is a unified structure used to supply functions for both clients and server.

How it works ? Abstract part

Firstly, GUI of TTool allows users to select and choose information they need to retrieve from the database. Secondly, all information is stored in a request message and sent to the server. Next, the server is responsible for analyzing the request message and retrieve, search for relevant information which matches with client requirements. In the next phrase, relevant information is stored in an answer message and sent back to the client. From this message, client will analyze information and show via TTool GUI to interact with users.

Technical part

Message.java

Structure of a message

private String cmd; //

private ArrayList<Object> content;

private ArrayList<String> options;

private ArrayList<String> values;

“cmd” is used for both client and server, to tell which type of message is. From client side, it could be a request message for searching, details, and statistic. From server side, it could be an answer message for searching, details and statistic.

“content” Is used for server to store results in order to send back to clients. It could be a string of xml, a byte array for transferring an image.

Both options and values are used for clients to let the server know what information the user wants to retrieve. for options, it could be an arraylist of string which contains strings both clients and server unified before. Beside that, values represents for real values respectively along with options.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| <options> | Keyword | Year | NoOfRecord | Os |
| <values> | Stuxnet | 2014 | 10 | Windows |

All get functions are used for get values from private variable of a message

public String getCmd()

public ArrayList<Object> getContent()

public ArrayList<String> getOptions()

public ArrayList<String> getValues()

All set functions are used for set values to private variables of a message

public void setCmd(String cmd)

public void setContent(ArrayList<Object> content)

public void setValues(ArrayList<String> values)

Constructors are supplied

public Message(String cmd, ArrayList<String> options , ArrayList<String> values)

public Message()

public Message(ArrayList<Object> content)

public void createRequestMessage(String cmd, ArrayList<String> options, ArrayList<String> values)  
The function createRequestMessage is used for creating a request message from client

public void createAnswerMessage(String cmd, ArrayList<Object> content)  
The function createAnswerMessage is used for creating an answer message from server

public static byte[] convertImageToByte()  
The function is used by server to convert an image to a byte array.

public static void convertByteToImage(byte[] imgByte)  
The function is used by clients to convert a byte array to an image.

Client.java

public static void analyseAnswerMessage(Message answerMsg)  
Client analyze an answer message from server. Depends on which type of the answer message, client will call right functions to interact with users via TTool GUI. In specific, the type of the answer message is stored in the variable “cmd” (command), if command is result for search or detail, client will read and show information via the Database tab. If the command is result for details, it will show an image.

public static Message createRequestMessage(String cmd, ArrayList<String> options, ArrayList<String> values)  
A function for creating a request message to send to the server. “cmd” can be “search”, “detail” or “stat” depends on the need of user.

The main function is to create a connection with server through TCP to send and receive messages.